Islamic University of Gaza
Engineering Statistics (ECIV 2305)
First Semester (2009-2010)
Midterm Exam

Instructors:
Dr. Ramadan Al-Khatib
Eng. Rana Jaber
Allowable Time: **90 min**

الشعبة	الرقم الجامعي	اسم الطالب/ة

Closed Book Exam

Question No.	Given Mark	Highest Mark	Notes
1			
2			
3			
4			
5			
Total		**25**	

Question 1: (4 points)

Suppose that A and B are mutually exclusive events for which P(A) = 0.3 and P(B) = 0.5. what is the probability that:

(a) (1 point) Either A or B occur;

(b) (1 point) A occurs but B does not;

(c) (1 point) Both A and B occur?

(d) (1 point) Are events A and B independent events? Justify your answer.

Question 2: (4 points)

Human blood may contain either or both of two antigens, **A** and **B**. Blood that contains only the **A** antigen is called type **A**, blood that contains only the **B** antigen is called type **B**, blood that contains both antigens is called **AB**, and blood that contains neither A nor B is called type **O**.
At a certain blood bank, 35% of the blood donors have type **A**, 10% have type **B**, and 5% have type **AB**.

(a) (1 point) What is the probability that randomly chosen blood donor is type **O**?

(b) (1 point) A recipient with type **A** blood may safely receive blood from a donor whose blood does not contain the B antigen. What is the probability a randomly chosen blood donor may donate to a recipient with type **A** blood?

(c) (2 points) If it is known that Ahmad does not have blood type B, what is the probability that Ahmad has blood type **O**?

(d) (2 points)What is the probability that two randomly-chosen persons have the same blood type?

Question 3: (6 points)

5 different science books, 6 different history books, and 2 different statistics books are to be arranged on a shelf. How many different arrangements are possible if:

a) (3 points) The books in each particular subject must all stand together,

b) (3 points) Only the science books must stand together?

Question 4: (5 points)

Samples of a cast aluminum part are classified on the basis of surface finish and length measurements. The results of 100 parts are summarized :as follows

		Length	
		Excellent	Good
Surface	Excellent	80	y
	Good	10	8

a) (1point) What is the probability of the selected part has excellent surface finish?

b) (2points) What is the probability of the selected part has excellent length and good surface finish?

c) (2points) If the selected part has good length, what is the probability that it will be of excellent surface finish?

Question 6:

A random variable X has probability mass function:

$$f(x) = \frac{1}{A}(6 - 2x) \qquad \text{for} \quad x = 0, 1, 2$$

a) What is the value of A?

b) Compute and sketch the cumulative distribution function.

c) Find F(1) and $F(1^-)$

Good Luck